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Some Aspects of Efficiency

— BY —

WILLIAM GEORGE BRUCE

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Some Aspects of Efficiency

INTRODUCTION.

The so-called great events in history assume a somewhat different aspect when measured by modern standards of efficiency. They undergo a change in the values accorded them by the older chroniclers and writers. The dangerous fascination wielded by hero-rulers, the spectacle of incompetents sitting on thrones and espousing the "divine right" of the King, the Christian inconsistency of conducting religious wars—all stand out in bolder relief as picturesque absurdities in human inefficiency.

The story of the Sabine women suing for peace between the combatants of that day becomes an eloquent plea for efficiency; Gutenberg rises upon a pedestal higher than that accorded to any warrior; the Magna Charta assumes a new lustre and magnificence; the "Renaissance" becomes an impressive awakening to efficiency; the pages of history recording the Augustan Age of Rome and the Elizabethan Age of England, become instructive, while the Thirty Years' War which reduced the population of Germany from thirty to twelve million, descends to the gloomiest depths of human strife. The French Revolution becomes the world's most frightful rebuke to inefficiency.

Aspiration sinks to brutal appetite, nobility to knavery and fame to infamy. The pomp and glitter of war sink into ugly contention while the peaceful pursuits assume a new attraction and importance. The contributions made by the Hebrew race to religion and morality, by the Greeks to architecture, sculpture and the drama, and by the Roman people in the construction of aqueducts, roads and the establishment of law and government, become more impressive and exalted.

Ignorance and selfishness, the two great evils of the world, always stood, and even today stand, as the greatest menace to man. Disorder, war, plague and famine have been the traditional and recurring evidences of inefficiency notwithstanding that education and justice have struggled against it in all ages. The pages of history are replete with records of that martyrdom which meant a better world for those that came to live in it. It is the struggle of light against darkness, of efficiency against inefficiency,

that impels the great march of progress which will continue persistently and triumphantly.

BEGINNING OF EFFICIENCY.

When primitive man, who obeyed the law of self-preservation by instinctively seeking his food, raiment and shelter, was followed by a race of men who "chipped flints to a narrow point," human efficiency had its beginning. They were followed by a "tool-using" people who rendered their food more palatable, their raiment more serviceable and emerged from caverns and caves into more habitable abodes. With the dawn of civilization human needs assumed a diversified form and with the birth of every new desire and aspirations there grew also new means, devices and institutions for their realization.

The world, too, soon experienced "that wonder which Plato called the beginning of knowledge." When the splendor of the human intellect, the power of imagination and the beauty of the soul were recognized then also an appreciation for higher aims and purposes was born. When men began to throw off the shackles of oppression and think and act for themselves; when swords were melted into plowshares; when the peaceful pursuits in agriculture, commerce and industry began to assert themselves—then the nobler attributes of man also came to the surface. Government and law, art and science had their beginning. Human efficiency began to assert itself.

The progress made from the beginning of recorded history until the present day, rises as a colossal structure of human achievement. And yet that progress is not an unbroken succession of forward steps. It is marked by setbacks and failure, by periods of decadence and decline as well as by ascendancy and advancement.

"Earth's upward struggle" says a modern historian, "has been baffled by so many stumbles that critics have not been lacking to suggest that we do not advance at all, but only swing in circles like a squirrel in a cage. Certain it is that each ancient civilization seemed to bear in itself the seed of self-destruction. Yet it may be held with equal truth that each new power, rising above the ruins of the last, held something nobler, was borne upward by some truth its rival could not reach."

WHAT IS EFFICIENCY?

The present high pressure stage of modern human efficiency is demonstrated in the momentum and rapidity with which inven-

tions, improvements and reforms follow each other. What required centuries of accomplishment is now accomplished in a decade; what was left to a lone man to espouse is practiced assiduously by millions; every aspiration and tendency has its scores of champions. Today the most efficient is not he of infinite learning but he whose learning in a given direction is intensified by specialization.

If it were possible to subject the efficiency of one hundred thousand men, covering the various vocations and defined activities of American life, to an experimental test, the results would not only prove interesting, but possibly most valuable. It would not only establish the average degree of ability with which men invest their work, but would reveal the degree of ability which go into the several activities. How do the farmer, the mechanic, the merchant, the manufacturer, the banker, the lawyer, the statesman, the clergyman, the educator, measure up in efficiency? Do they reach a hundred per cent mark? Or do they fall considerably below the higher standard?

Conjecture along these lines may prove futile, but it is reasonable to assume that perfection had been reached in exceptional instances only and that the average is far below the high-water mark.

Efficiency, as now popularly interpreted, scored its first success in the field of manufacture. Its introduction came in the form of a generic force, touching many parts, combining many entities, dovetailing motion into motion, action into action, adjusting and welding loosely jointed parts into powerful units, vitalizing and strengthening these into one grand unit, creating a related and compact whole.

As applied to mechanics and the science of production it received its first introduction when the machine superseded hand work and when the factory system was inaugurated upon an enlarged scale. It was then that the economy of time, labor and money was recognized as a factor and that the ingenuity of man was applied in ascertaining the relative values of these factors and their advantageous application and combination. Experts sprang up like mushrooms and offered their services to manufacturers, commercial and financial institutions, to governments and educational systems. In the main their services have been valuable, but even the isolated case of error or inability has done some harm to the cause.

The elimination of waste, however, became a serious study. Men devoted their time to the subject and became experts. Efficiency *per se* became a profession which invaded the industrial field, then reached out into the commercial channels and finally applied itself to various fields of human endeavor.

The results attained here have warranted such a widespread acceptance of the doctrine of efficiency that an international movement for its further development has been inaugurated.

It is this movement which has caused your presence tonight. You are a part of it. Its scope is at once broad and deep because in purpose it strives to serve the highest and noblest aims of life. It announces that its objects shall be the advancement and dissemination of knowledge relating to efficiency, in organization and in method, in all branches of the world's work. Again, efficiency, within the purposes of this society, is defined as the best practical relation between the expenditure of human effort and the results of that effort in human benefit or good.

What movement could be more purposeful or laudable? The world is full of ingenuity and ability, of noble impulse, of commendable aim and holy desire. These must be assembled, stimulated, organized. The instrumentalities of expression, of attainment, of realization must be provided. The world's work must be invested with that strengthening and efficiency if it is to render the highest measure of service to humanity.

THE WORLD'S FIRST ASSET.

Efficiency has its enemies not only in a mere blinded opposition, but also in those men who proceed mistakenly in its employment. It has had these in all ages. Misinformation leads to misunderstanding, and misunderstanding leads to opposition. Light allays fears and restores confidence.

The modern efficiency movement does not mean to grind labor in the interest of capital, or to cause a greater disparity in the distribution of wealth. It does not mean merely economy in production in order to enrich the employer at the expense of the employe.

The current movements in behalf of safety first, vice crusades, eugenics, fire-prevention, anti-tuberculosis and clean-up campaigns, munificent endowments for colleges, libraries and hospitals, surveys in the interest of charity and social uplift, woman's suffrage, workman's compensation, disarmament, arbitration and world peace, are all in the direction of securing greater human ef-

iciency. We may scoff at reformers and propagandists, but nevertheless we must admit that their efforts aim in the direction of a better and more congenial world. The Nobel prize cannot go to all men, but those who earn it are the recognized benefactors of their time and are entitled to our gratitude and praise.

A writer recently said: "Quality must not yield to quantity, there must be no forfeiture of refinements or justice. Where the idealistic is unrecognized the humane is shouldered out by the mechanical, the machine glorified and the man behind the machine more or less subordinated." Very true and well stated, but efficiency in its highest and best interpretation makes man the primary as well as the ultimate consideration.

For instance, the failure of the French in constructing the Panama Canal and the success of the Americans in completing the same afford at once the greatest modern example of efficiency as well as inefficiency. It involves not only engineering proficiency, but a recognition of all the elements that make for the physical well-being of man himself. It recognizes the fact that the human machinery which directs and controls the mechanical machinery, must have first attention. When the French ignored the sanitary conditions of the canal region and permitted their men to die of fever and pestilence, they violated the first and most important rule of human efficiency. They failed to realize that "the common individual is the sublimest asset of the world."

Thus, while efficiency means directness in thought and action, the elimination of circumlution, of superfluous effort, of waste energy, it is not confined to the field of mechanics or mechanical production, but applies itself to man, his physical, mental and moral well-being.

SOUND BODY—SOUND MIND.

It therefore also logically follows that all efficiency has its beginning with the condition of the physical man. A sound body is a prerequisite to a sound mind. We owe, consequently, our greatest debt to medical science. When it emerged from blood-letting quackery of the centuries past to a conservation of the elements that make for physical vitality, a boon was conferred upon mankind. When it subdued disease and prolonged human life, it made the greatest contribution to human efficiency.

But the student of the human body and the chemist are not the only ones that have contributed to the physical well-being of man. The sanitarian and the mechanician, too, have promoted

health and longevity. The bathroom found in the average American home is an ingenious utility which royalty could not enjoy even a half century ago. One vacuum cleaner takes the place of a thousand brooms. Street cleaning devices are not only designed to eliminate labor, but also to promote sanitation. The chemist has established the nutritive value of every food product. The physical man is guarded and protected in a thousand ways.

While the physician has progressed the schoolmaster has not been idle. Pedagogy no longer attempts to pump or hammer knowledge into the immature mind through the means of cumbersome text-books, arbitrary discipline and tedious memorizing and routine. It understands the science of mind and proceeds along logical lines to awaken the latent faculties, arouse interest and develop the mind from within. The child is no longer adjusted to the text-book, but text-books are adjusted to the several stages and capacity of human understanding. Psychology and pedagogy now travel side by side lifting the rising generations from darkness and ignorance into the light of knowledge by the shortest route. But here I do not deny that education must seek a wider diffusion and sink deeper. It must train the whole man, reinforce the three R's with the three H's—train the head, the heart and the hand.

The same must be said of effort in the field of Charity. True Charity can no longer consist in the mere feeding of the hungry and clothing the naked; it must also lift the unfortunate into a self-sustaining and self-respecting being and restore him to society as an efficient member thereof.

In the degree that efficiency is beneficial to society so inefficiency is harmful. It is a mistaken notion to hold that inefficiency is merely a local or individual disadvantage. If the carelessness of your neighbor causes a fire on his premises which burns your house, if his ignorance causes a contagious disease which spreads to your family, if he causes bankruptcy which affects your pocketbook—his inefficiency is no longer an individual or isolated harm.

It was the inefficiency of single persons that caused the great Chicago fire, the sinking of the Titanic and the Empress of Ireland and the revolt in Mexico, and thus caused harm to many. Thus, society cannot stand aloof and hold that efficiency is merely a matter of personal advantage. It is a question of common, mutual and reciprocal interest and concern.

There is another phase of the subject which is suggested at this point, namely certain tendencies and activities which are pursued in the name of progress and which really bear in them the seeds of inefficiency. They foster the conceits and vanities, the absurdities and abnormalities of a modern day and find their momentum, not in an aesthetic sense, but, in pure commercialism.

The fashion prince who, in striving for the unique and chic, creates garments that are ungraceful and indecent in design, uncomfortable in wear and injurious to health, the chef who devises attractive food combinations devoid of nutrition and digestive qualities, the dramatist who exalts vice and crime and submerges the majesty of innocence and virtue, are not true champions of progress. Those who employ their genius in creating new appetites and allurements, new fads and fashions which weaken rather than strengthen the physical, mental and moral man, are among the modern apostles of inefficiency.

THE SMALLER THINGS OF LIFE.

No records or series of records could adequately tell the story of the millions of improvements which have been made in the smaller accessories and devices designed to add to the convenience and comforts of life.

I once entered a jewelry shop in Wales and to my surprise found it stocked with German clocks. I inquired the reason and was told that the English clocks were heavy, clumsy and expensive while the clocks made in the Black Forest of Germany were dainty in design, serviceable and moderate in cost. Efficiency was the determining factor here in the purchase of clocks. It meant better clocks for less money.

A schoolmaster in Germany once showed me an American Yale lock which he had attached to the front door of his home. He was proud of this improvement as it obviated the carrying of a key weighing half a pound. The advantage, he said, was that the door locked itself, that now every member of his family had a key and that all the keys together weighed only one-half of the old-time house key. Tons of brass, copper and iron are wasted in Germany in monster locks and keys, with a maximum in investment and a minimum of service. The invention of the Yale lock meant more service for less money.

In recent years ornamental street illumination has received the attention of cities throughout the country. Suddenly pon-

derous cluster lights appeared everywhere. It was believed that the problem of street lighting had been solved, until it was discovered that there were those who had given special study to the subject of lighting and that efficiency here demanded a minimum of lamp properly located and a maximum of light wisely diffused.

Beauty, too, has been added to utility and thus has invested the trappings of human existence with the power of affording pleasure and elevating the mind. A modern crockery, furniture, or dry goods store is no longer a mere stock room. They are exhibits of the industrial arts where utility is combined with beauty in color and design. When art extended its influence to the industrial field and lent its touch to the product of the factory a great forward stride in progress was made.

And many more things might be enumerated—where the old has been improved into the new—all designed to render a greater service to man, add to his convenience, comfort and happiness.

A German philosopher a few years ago wrote a magnificent book on "The Joy of Living." Inspired by this book, a German leader in industrial education carried the spirit of joy and enthusiasm into useful employment, cultivating the joy and satisfaction of doing things worth doing, and in doing them well. What a splendid stimulus is here given to the cause of true efficiency.

CONSERVATION AND EFFICIENCY.

Someone has divided the history of this country into periods of exploration, colonization, exploitation and conservation. With the entrance of the twentieth century this country proclaimed an era of conservation. It realized that it had been too wasteful in the use of its natural resources, and in the expenditure of human energy. The doctrine of conservation has since then been dealt with in the light of almost every human activity. But, is it not a fact that where true efficiency has been exerted that conservation has followed as a logical consequence? Does not efficiency precede as well as imply conservation?

If we hold that efficiency primarily means order, system and economy, eliminating all waste of time, labor and substance and achieving results in the most direct manner, then we can also consistently hold that efficiency implies the conservation of nature's forces.

In all new countries where natural resources abound on every hand and where opportunities for material success await every man, the elements of conservatism and economy are apt to

give way to waste and extravagance. In parts of the older world where a pound of manure is as costly as a pound of bread the problem of human existence is a stern one and the problem of methods in rendering the soil productive is an acute one. Intensive farming may be an old-world expedient which has grown out of dire necessity and which does not exist in the new world, but intensive farming, nevertheless, is an eloquent expression of efficiency.

PROGRESS IN THE MECHANICAL WORLD.

In the progress of the world the Great Republic, under whose fostering care we live, has a distinctive mission to perform. It is so situated upon the globe as to be free from troublesome neighbors, endowed with natural wealth, with free institutions, and unfettered from the traditions and evils of older nations.

It, therefore, possesses the inherent powers that make for the highest expressions of human endeavor and the advantages essential to world leadership.

Let us see to what extent we have rounded our possibilities for pre-eminence in the field of industrialism. An authority in metallurgical engineering recently said: "This record of ninety arc-furnaces and forty induction-furnaces in operation or under construction will come as a rude shock to those purblind American steel-makers who seem to regard electric furnaces as an expensive European fad, who do not see their possibilities and who think to save money by letting them alone. The old, old story is repeating itself, and American industries are again trailing after the European—five years or so after them. The joke would not be so hard on us if we did not usually pretend or profess to be leading the world. We may be leading the world in making profits, but in general this is not by virtue of our enterprise and superlatively good practice, but simply by reason of our abundant natural resources and high tariff, and in spite of very evident mossbacked conservatism and frequent lack of initiative in adopting technical improvements."

Another leader in the field of mechanical science gave voice to the following: "It is humiliating to realize that nearly all recent improvements in electric lamps, both arc and incandescent, bear the foreign trade-mark, in spite of the fact that electric lighting is, in the main, of American origin. . . . Similarly, in spite of all this country has done in the development of the steam engine, American manufacturers are far behind the times in the use

of superheated steam . . . In not a few of the engineering trades we are, in this country, copying European products instead of compelling them to copy ours as of yore."

The editor of a leading American technical magazine recently said: "It would be easy to cite fifty or a hundred important inventions of the last quarter-century which have originated in Europe and have come into extended use there, and which have either merely been copied or in some cases almost ignored here. . . . When one views the whole field of engineering and industry, and particularly the progress of the last twenty-five years, it is humiliating to confess that, instead of being in the lead, the United States is lagging far in the rear."

Equally regrettable is the fact that the large combinations have not always promoted true economy and service. The purchase and subsequent suppression of valuable inventions in a selfish spirit by great corporations has impeded rather than advanced mechanical perfection. Prof. Duncan, an authority, says: "The creation of combinations for the elimination of competition has caused the substitution of business intrigue for manufacturing efficiency."

The country must realize that in order to compete with the world in manufactured articles it must have as a prime requisite the trained mechanic. Industrial education has only made a beginning. Its greater task is yet to be performed. When foreign nations surprise us with new discoveries in the science of production, new inventions and new departures, which confer permanent blessings upon mankind, then we must awaken to the work that is still before us.

A CHALLENGE TO COMMERCE.

While the American people are concerning themselves with the science of production they cannot overlook the science of distribution. "Mere product production, however big and scientific" says an economist, "is useless without effective and efficient distribution and exchange. Commerce, the great distributor of products, demands for its successful conduct equally thorough and specialized training and methods."

This being true we must not only rely for the sale of our competitive manufactured articles upon a domestic market but study and ascertain the possibilities of an extended export trade, and then apply our energy and ingenuity to secure it.

The United States has been rapidly changing from an agricultural country to one in which manufacture plays an important part. While the agricultural productivity of the nation has increased three-fold within the past half century the industrial productivity has increased five-fold, indicating that with an increasing population we are tending to become one of the great manufacturing countries of the world. This will only be successfully realized in a widened world market.

It is an admitted fact that the United States has neglected her merchant marine and has not fostered her foreign trade upon any comprehensive plan or with any degree of ingenuity or energy. She has failed to study the demands of foreign countries and to fully realize her own opportunities for supplying them.

In recent years Germany has far outstripped the United States in the impetus she has given her industrial and commercial efficiency as demonstrated in her world trade. Her merchant marine which course the waters of the globe serve as commercial warriors and trade-promoters.

If the United States is to hold and extend its place in the markets of the world it will, above all things, have to strive for commercial as well as industrial efficiency. Our exports consist of raw materials and food products rather than articles of manufacture involving skilled labor. The day will come when this country will realize that it is economically unsound to export our raw materials and then buy them back in the finished product.

"Business has become so complex" says Dr. Holdsworthy, an economist, "so highly competitive, so dependent upon other business, so sensitive to social, political and economic influences which are greatly increased with the widening of the market and the narrowing of the margin of profits, that those who are engaged in it successfully need a different equipment from that thitherto thought sufficient for the business man."

The American manufacturer whose products are adaptable to the needs of other countries must learn to differentiate between the peculiarities of a domestic and foreign market. His selling organization must also study these foreign needs and the conditions and terms upon which they can be met.

A catalogue printed in the English language or an English speaking salesman alone will not sell American goods in a foreign land. Both catalogue and salesman must address themselves to the customs and in the language of the country whose trade

they seek. They must recognize the commercial usage and customs under which the seller must here deal with the buyer.

Selling campaigns in foreign lands, too, frequently involve longer periods between sowing and reaping, between production and profit, than the impetuous and brisk Yankee is willing to accord. He has not developed the faculty for that patient plodding and comprehensive planning which constructs with keen exactness and calm deliberation.

The American business man must also cultivate both that temper and temperament and that sense of proportion which distinguishes, between important things and trifles, enables him to minimize errors and blunders, conserve nervous energy and guide his commercial ship with a safe and steady hand.

ROOM FOR FURTHER PROGRESS.

While the civilized world has reason to assume that it has reached the highest stage of efficiency ever attained in its history, the realization has also gained ground that much more can and must be achieved. "Throughout the world" says Lyman Abbott, "the people are demanding a more direct and controlling share in government and a better measure of social justice." What is true here is equally true in other fields of endeavor, and warrants the statement that the world's work is not performed in the most orderly, economic and efficient manner. Thus, if the subject assigned to me permits of any argument it must be in the direction of the fact that much remains to be accomplished.

With the advent of the telephone, the telegraph, the wireless, the moving picture, the phonograph, with aero flight and the monster ocean liners—in fact with every new invention the thought grows that human efficiency has reached its zenith. But, mechanical ingenuity is by no means exhausted. Nor have the various sciences reached their highest stage of perfection. Nor has government reached its highest measure of service.

As long as nations waste their own substance in constructing huge instruments of war, deny to the masses the blessings of civilization, deprive them of their liberty and a voice in government, there is yet much to be accomplished in human progress. When medical science has as yet failed to solve either the prevention or cure of all malignant disease, when the lawmakers and judges puzzle over the elements of equity and justice, when economists find cruel discrepancies between wage standards and the

cost of living, then human efficiency has not reached its zenith.

Charles W. Eliot tells us that "peace-keeping, religious toleration, the development of manhood suffrage, the welcoming of new-comers and the diffusion of well-being" constitute our five conspicuous contributions to the betterment of the world.

Let us give ourselves full credit for our contribution to the cause of liberty and equality, for gigantic accomplishment in the field of science and mechanics, for grasp and daring in commercial enterprise, for our humanitarian attitude on international relations, in fact for all laudable achievement, but let us not delude ourselves into that self-sufficiency which may render us unconscious of our own weakness, incompleteness and inefficiency.

When the great American nation, the land of enlightenment and progress is still dotted with dark spots of illiteracy and ignorance; when our natural resources are still being despoiled; when a land of opportunity and of plenty reveals misery, poverty and starvation, there is evidence that the affairs of the human family are not yet perfectly organized and directed. When mechanical production is still wasteful; when bitter strife mars the relations between capital and labor, when statesmanship fails to realize its full obligation to an entire people, when the distribution of the fruits of labor are subject to gross inequities, then the adjustments between man and man are still incomplete.

The Great Republic must assert itself on behalf of true and lasting progress. It must take a leading position among the nations of the earth for that advancement which shall mean better men and women, physically, intellectually and morally. It must lead in the cause of liberty and justice, education and government.

If such is the cause of the nation then it is also the cause of every integral part, of every man, woman and child. It is then the duty of every individual to strive for that efficiency which will enable him or her to render the highest measure of service for a better and happier existence of all mankind.

The future development and well-being of the American City will depend upon its own efficiency in the industrial arts, in commerce and transportation, in civic government and education, in social and moral effort. In order to be worthy of the great nation, as an integral part, it must perform its labors with intelligence, with energy and with enthusiasm. It must keep abreast with the great march of human progress. We live in an age of speed, specialism and service and all must respond to its call.

Yes, go out and spread the gospel of efficiency; save all waste of human energy, of natural resources and of mechanical power to the end that it may lift the burden from the overworked, sober the idling rich into a sense of responsibility, banish physical pain and mental anguish; enable all children to bask in the sunshine, to laugh, sing and play, teach every man to contribute his full share to the world's work in accordance with his physical and intellectual capacity, that each may add his mite to the peace, prosperity and happiness of an entire human family and to the making of a better world.



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